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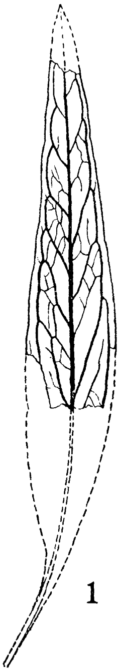
von Mueller in the Transactions of the Victoria Institute, 1 : 24, 1854, and figured in his Eucalyptographia, Decade V, 1880.

In the accompanying cut, Fig. 1 represents the fossil leaf and Fig. 2 is a copy of one of the leaves of approximately the same size of *E. largiflorens* Muell., from the plate accompanying the description given in the work already referred to. The substantial identity of the nervation is apparent at a glance. In describing that species in the same work, Baron von Mueller devoted only two lines to the nervation as follows : " Lateral veins extremely fine, diverging at a very acute angle or not very spreading nor quite close, the circumferential vein somewhat removed from the edge." This description is, of course, very inadequate, but it is well known that botanists pay scarcely any attention to nervation and do not take the trouble to acquaint themselves with the proper terminology of the subject.[*]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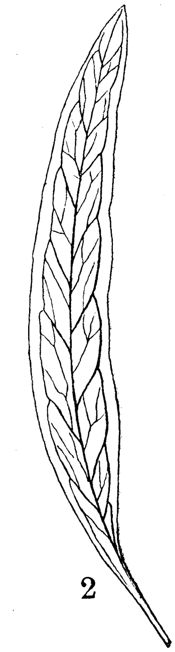
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We thus have another link in an already long chain of evidence which goes to prove that the Australian Fever Tree has had a long history, and was widely distributed over the globe in Cretaceous and Tertiary time, millions of years before man made his appearance.

Two new Species of Sanicula from the Southern States.

By Eugene P. Bicknell.

In a paper published in 1895,[*] describing two new species of *Sanicula* from the Eastern States, I hinted my belief in the existence of still a third unrecognized species. The single plant which gave support to this view, more strongly held than expressed, had been found in an afternoon's visit to Lookout Mountain, Tennessee, on June 21, 1894, during a short delay of the train on the way up the mountain. Since that time more complete material has come to hand which shows that the plant is entirely distinct from both *Sanicula Marylandica* L. and *Sanicula Canadensis* L., its nearest allies, with either one of which, however, it might easily be confused by anyone not possessing a true understanding of those species.

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[*] This may be found summed up, with illustrations, in the Century Dictionary, article *Nervation.*

[*] Bull. Torr. Club, 22 : 351–361.

From the specimens newly in hand it appears that a year before the Lookout Mountain plant was discovered, Dr. John K. Small had collected precisely the same thing at the base of Little Stone Mountain in middle Georgia, and it now gives me pleasure to connect Dr. Small's name with this new species, more especially since he himself would doubtless have shortly distinguished it had it not been described here.

It seems that a still earlier collection of the plant was made by Mr. S. M. Bain at Jackson, Tenn., in May, 1892 (" No. 302, Plantae Tennessei Occidentalis"). This specimen, although differing somewhat from all the others, is unquestionably to be referred to the same species. The east Tennessee and Georgia plants are closely matched by specimens collected by Mr. George V. Nash in August, 1895, at Tallahassee, Florida, the southernmost point at which the plant has been found.

SANICULA SMALLII n. sp.

Root perennial, or possibly biennial; stem 1½°–2° tall, smooth, somewhat striate, simple below, or with one lateral branch, above forking into two widely spreading or ascending naked branches sometimes 8′ long, each bearing an umbel of 2–6 rays; lateral branch sometimes 12′ long, like the stem supporting two slender ray-like umbel-bearing branches; stem-leaves 3–4 up to the involucral pair, slender-petioled, two of them sub-basal on petioles 4′–6′ long; leaf-blades rather small, mostly 3′–4′ wide and 2′–3′ long, sub-coriaceous, dull green, paler on the lower surface and often above along the veins, which are distinctly in relief, reniform in general outline with a deep or shallow sinus, 3-divided or nearly 3-foliolate, the segments close together, the lateral pair deeply cleft or rarely parted; segments obovate or the lateral pair broadly rhomboid, dentate-serrate with short-aculeate teeth, or slightly incised, often cleft into three short lobes at the obtuse or sometimes acute apex especially on the lower leaves; involucral leaves very short-petioled, 3-cleft or 3-parted, the segments narrower and more acute than in the lower leaves; involucels minute, or sometimes ½′ long; rays of umbel slender, often divaricate, ¾′–1½′ long, jointed to their attachment, sharply striate, the striae often subserrulate-scabrous; a solitary ray or peduncle arises from the fork of the stem bearing a single flower cluster; fruit sessile, subglobose, somewhat compressed, 2½″–3″ high to tip of calyx-segments, spreading across bristles 3″–4″; bristles slender, at the base of the fruit minute but perfectly formed, longer above, the uppermost 1″–1¼″ long, surpassing the nearly erect calyx-segments which are ½″–¾″ long, linear-subulate, rigid and separated by distinct intervals; styles slender, diverging or slightly recurved, little longer than the calyx-segments; pericarp thin; commissural scar narrow, ½″ wide, usually covered with a whitish incrustation; oil-tubes 5, arranged nearly as in *Marylandica* but smaller; seed in cross-section suborbicular, not furrowed dorsally or but slightly so, the inner face medially concave or sulcate; sterile flowers mixed with the fertile, most numerous in the inter-rameal cluster, on pedicels 1″–1½″ long, the sepals ¾″–1″ long, linear-subulate or cuspidate, with a strong medial nerve especially noticeable on the inner side, at full maturity rigidly spreading; petals obovate-oblong, apparently shorter than the calyx segments; roots clustered, very thick or sub-tuberous.

Specimens examined:

Tennessee: Jackson, rich woods, May, 1892, S. M. Bain; in flower. Lookout Mountain, June 21, 1894, E. P. B., rocky woods; in immature fruit.

Georgia: Base of Little Stone Mountain, June, 1893, John K. Small; in fruit. Type.

Florida: Tallahassee, August 7–9, 1895, George V. Nash; in fruit.

This plant, although occupying a position somewhat intermediate between *Sanicula Marylandica* and *Sanicula Canadensis*, is in no way involved with either of these species. From the former it may be distinguished by its smaller size, three-divided coriaceous leaves, the cauline slender-petioled, widely bifurcate stem, shorter-pedicelled sterile flowers, never in separate heads and having divaricate segments, smaller fruit with thinner pericarp and shorter styles.

From *S. Canadensis* it may be known by its mostly simple stem terminating in two elongated branches, each bearing a long-rayed umbel, thicker leaves and much larger sessile fruit with longer styles.

With *Sanicula gregaria* the species has no close affinity. The minute campanulate calyx of *gregaria* separates it sharply from all our species, while its 5-divided thin leaves, umbellately branched stem and branches, trifoliolate involucral leaves and much smaller longer-styled fruit distinguish it radically from *Smallii.* The branching of *Smallii* is more like that of *Sanicula trifoliata* than any other one of our species, and selected leaves of the two may be closely matched in general shape, but the larger and thinner leaves of *trifoliata* and its oblong short-styled fruit with the remarkable arrangement of the oil-tubes denote its wide difference.

Sanicula Smallii differs from all other eastern species by styles of medium length, frequently styliferous sterile flowers and thickened roots.

In point of this new southern *Sanicula* I have carefully read Rafinesque on his alleged new genus and species "*Triclinium odoratum*," published in 1817 (Fl. Lud. 79). Taken by itself, Rafinesque's specific description would apply with tolerable exactness to our new species, but his generic definition and added remarks, insisting on long styles recurved to the base of the ovary, positively excludes this new species and, strictly taken, all other known eastern species as well. Allowing for possible exaggeration, however, it may be well here to take the opportunity of considering further our long-styled species *Marylandica* and *gregaria.* The specific description alone scarcely bars *Marylandica* unless by the terms "*folius longe-petiolatus*," which is distinctly not the case with the stem leaves of this species. The same objection holds against *gregaria*, while the further characterization of "*foliolus lateralibus bipartitus*," untrue for *gregaria*, describes exactly the condition in *Marylandica* and nearly that in *Smallii.* On the other hand, there are points in the description which apparently could have applied only to *gregaria.* In perhaps the most important of these, however, viz. "*calyx urceolatus 5-fidus*, Rafinesque is himself contradictory, for he concludes by declaring that his genus "differs from *Sanicula* by divided calyx * * * !" Here is a distinction absolutely without a difference, and it would actually seem to require us to believe that Rafinesque's conception of the genus *Sanicula* as distinct from *Triclinium* was based on the species *Sanicula gregaria.*

So far as is known, *gregaria* is the only one of our species having odorous flowers, but the fragrance is of the faintest and quite unworthy to be compared with the sweet scent of *Reseda odorata* with which "*Triclinium odoratum*" is credited.

Upon the whole, therefore, we have every reason to believe that "*Triclinium odoratum*" was a composite production pretty certainly containing elements of *gregaria* and, not improbably, of *Marylandica* and *Smallii,* one or both. On this understanding it might be held that the name *Sanicula gregaria* should give place to *Sanicula odorata* (Raf.), and it would certainly be difficult to show that "*Triclinium odoratum*" was not, in part, the plant now known as *Sanicula gregaria.* To my own way of thinking, however, a resurrectionist acting under the law of priority can rightly proceed only on the authority of facts so unequivocal as to admit of no conflict of opinion whatever.

SANICULA FLORIDANA n. sp.

Nearly allied to *Sanicula Canadensis* but commonly smaller. Stem-leaves more numerous and closer together, the basal ones especially shorter petioled, small, mostly under 2 inches wide, 3-divided, the lateral pair of leaflets parted nearly to the base ; leafets thickish, obovate-cuneate, abruptly narrowed below with concave or excavated sides, adjoining leaflets thus often enclosing lenticular spaces, very acutely dentate-serrate and more or less openly cut-lobed or cleft above, the spiny-cuspidate teeth relatively fewer and larger than in *Canadensis,* their margins pale, callous and thickened and passing gradually into the rigid yellowish spine ; involucral leaves and involucres usually small and laciniate; panicle widely branched and slenderly dichotomous; fruit often smaller than in *Canadensis* and more nearly sessile, the bristles, especially below the middle, rather shorter and somewhat less spreading; styles sometimes longer; commissural scar broader, pinched out at the contracted base of the fruit instead of continuing through the pedicel as in *Canadensis ;* pedicels of sterile flowers stout and very short, usually not longer than the calyx.

Specimens examined:

South Carolina : Santee Canal, W. H. Ravenel.

Georgia : Savannah, June, 1895, John K. Small.

Florida : Duval Co., open Oak Woodlands, A. H. Curtiss. Type.

Lake City, Columbia Co., July 11–19, 1895, George V. Nash—Plants of Florida, no. 2244; Eustis, Lake Co., Hammock Land, June, 1894, George V. Nash—Plants of Central Peninsular Florida, no. 988.

Alabama: Auburn, Lee Co., July 8, 1896, F. S. Earle and L. M. Underwood.

Mississippi: Ocean Springs, June, 1896, L. M. Underwood.

This plant at once approves itself to the eye as different from *S. Canadensis*, notwithstanding a seeming absence of such crucial characters as subsist between other eastern species. Its distinctive appearance comes mainly from the leaves, the segments showing a marginal pattern which greatly accentuates the style of cutting characteristic of the more northern plant.

In giving to this plant the formal designation of a species, I do not wish to be understood as holding that it is totally disconnected organically from *Canadensis*. Whether it is or is not I do not know, nor is the question one which need affect the right of this positively individualized plant to bear its distinctive name. Undoubtedly, its *species quality* is of lower grade than that of *S. Smallii* or any other one of our explicit eastern species; nevertheless the quality in marked degree is there. It is doubtless a geographical derivative of *Canadensis*, and is so nearly related to it that interrelation may be expected where the ranges of the two adjoin. Certain specimens of *Canadensis* from South Carolina and Georgia appear to show an approach towards it, although typical *Canadensis* extends into Florida, as attested by several specimens, and as far south as Southern Texas as shown by Mr. A. A. Heller's "No. 1713, Plants of Southern Texas, San Antonio, May 5, 1895," which closely matches many northern specimens.

Affinities of Caulinites Ad. Brong.

BY ARTHUR HOLLICK.

(PLATE 320.)

In Science 1: 725, 726 (June 28, 1895) may be found an abstract of the proceedings of the Biological Society of Washington for June 1st of that year, in which Dr. Lester F. Ward calls